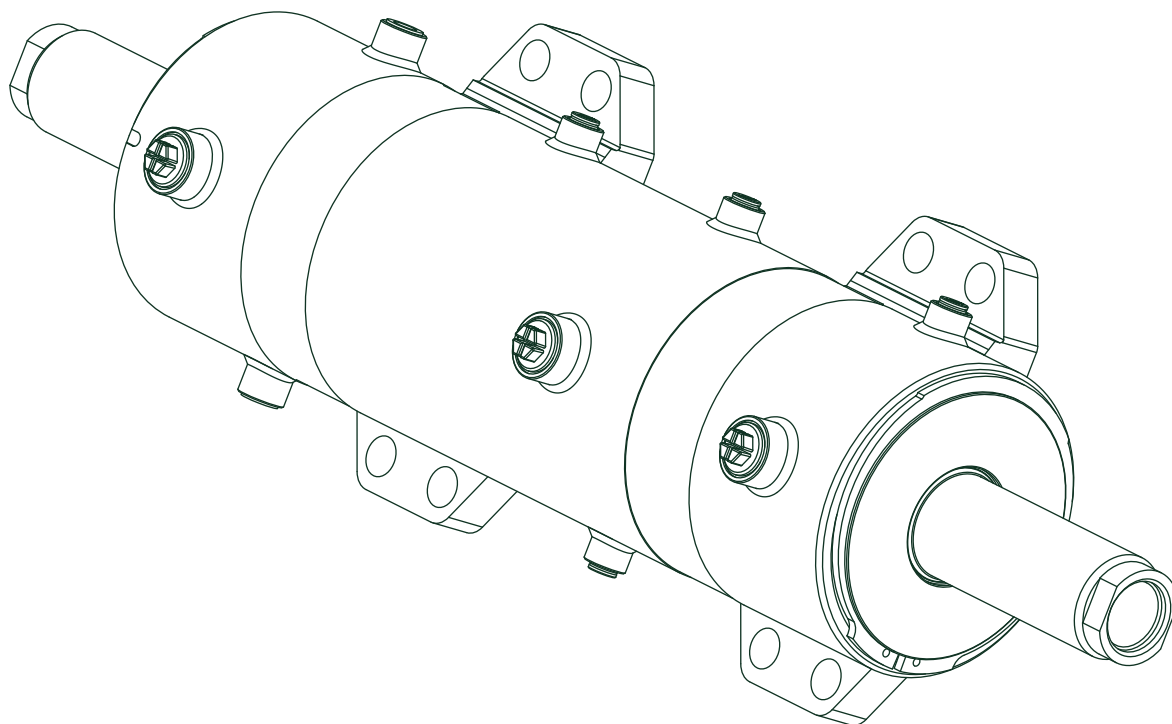




Workshop Manual

Seals Replacement

BPW Part No.: 05.444.50.73.0 Cylinder



Introduction

The purpose of this manual is to familiarize yourself with the disassembly,- assembly as well as seals replacement of the steering cylinder 05.444.50.73.0

This repair guide based on the technical instruction document of manufacturer of steering cylinder.

Study this manual carefully before you perform any maintenance procedures.

As of: May 2026

Subject to change without notice.

Current versions and additional information can be found online at www.bpwagrar.com

Table of Contents

⦿

1

Safety regulations, safety information.....

4

1.1

Safety regulations

4

1.2

Safety information

5

⦿

2

Identification of components, Variant 1.....

6

2.1

Securing the guide sleeve with a Seeger ring

6

2.2

Seal kit, variant 1

7

⦿

2

Identification of components, Variant 2.....

8

2.3

Securing the guide sleeve with a Steel wire ring

8

2.4

Seal kit, variant 2

9

⦿

3

Disassembly the Cylinder

10

3.1

Guide Sleeve Fastening with a Seeger Ring

10

3.2

Guide bushing fastening with a steel wire ring

15

⦿

4

Replacing seals

17

⦿

5

Installation of the cylinder

21

5.1

Guide Sleeve Mounting with a Seeger Ring

21

5.2

Guide bushing mounting with a Steel wire ring

24

⦿

Notes.....

27

1 Safety regulations, safety information

1.1 Safety regulations

- ⦿ All work must be performed by trained mechanics at competent repair facilities or authorised specialised workshops who have access to all relevant tools and have acquired the know-how required for this work. Anyone who performs maintenance and repair work must have been trained as an automotive mechanic and already have experience in repairing trailers.
 - ⦿ Comply with local safety regulations.
 - ⦿ The relevant operations and service regulations as well as safety regulations of the vehicle manufacturer and of the manufacturers of the vehicle parts must be adhered to.
 - ⦿ Ensure adequate ventilation at the workplace.
 - ⦿ The vehicle must be prevented from moving during repair work. Please observe the relevant safety regulations for repair work on commercial vehicles, in particular the safety regulations for jacking up and securing the vehicle.
 - ⦿ Do not perform repair work unless wearing protective clothing (gloves, safety boots, safety goggles, etc.) and using the recommended tools.
 - ⦿ Work on steering cylinder removed from the vehicle must be carried out with the components fixed in place such as in a screw vise.
 - ⦿ Only use recommended tools.
 - ⦿ A second mechanic must provide assistance when working with heavy component(s) (steering cylinder removal/installation).
 - ⦿ The entire hydraulic system and components must be depressurised before being removed.
 - ⦿ Following each repair, perform a function check or a test drive in order to make sure that the hydraulic system and steering cylinder are functioning correctly.
 - ⦿ All exchanged components must be reused or disposed of in accordance with the applicable environmental regulations, laws and directives.
-

Safety information 1.2

- © This workshop manual contains different types of safety instructions, each of which is designated by an icon and a signal word. The signal word describes the severity of the potential danger.



Danger !

Immediate potential danger of serious or fatal injury (severe injury or death).

Warning !

Possible potential danger of serious or fatal injury (severe injury or death).

Caution !

Possible dangerous situation (slight injury or damage to property).



Repair Guide:

Risk of damage to property or consequential damage if this information is not observed.

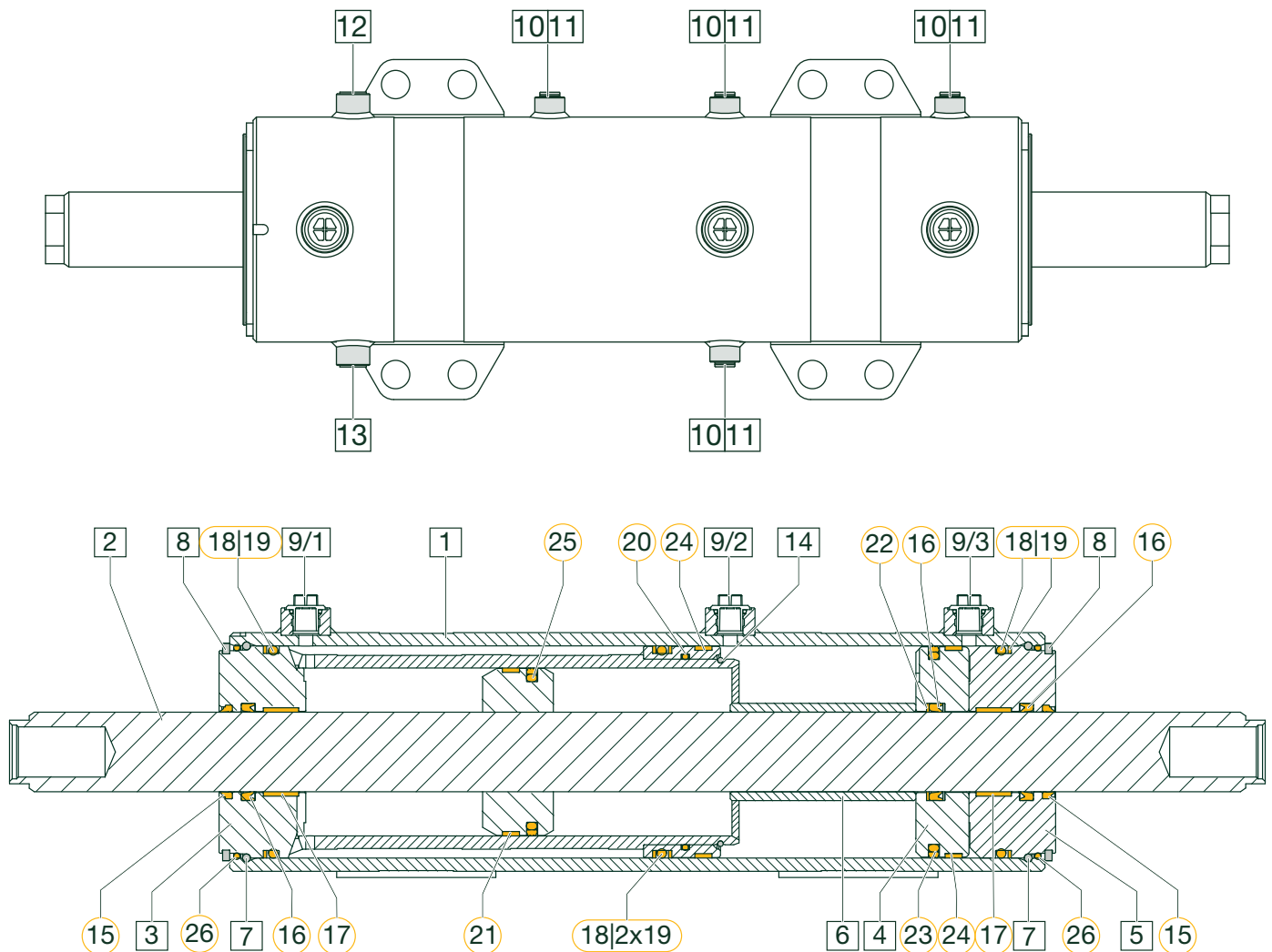


Note:

Application hints and especially useful information

2 Identification of components, Variant 1

2.1 Securing the guide sleeve with a Seeger ring



Item Description

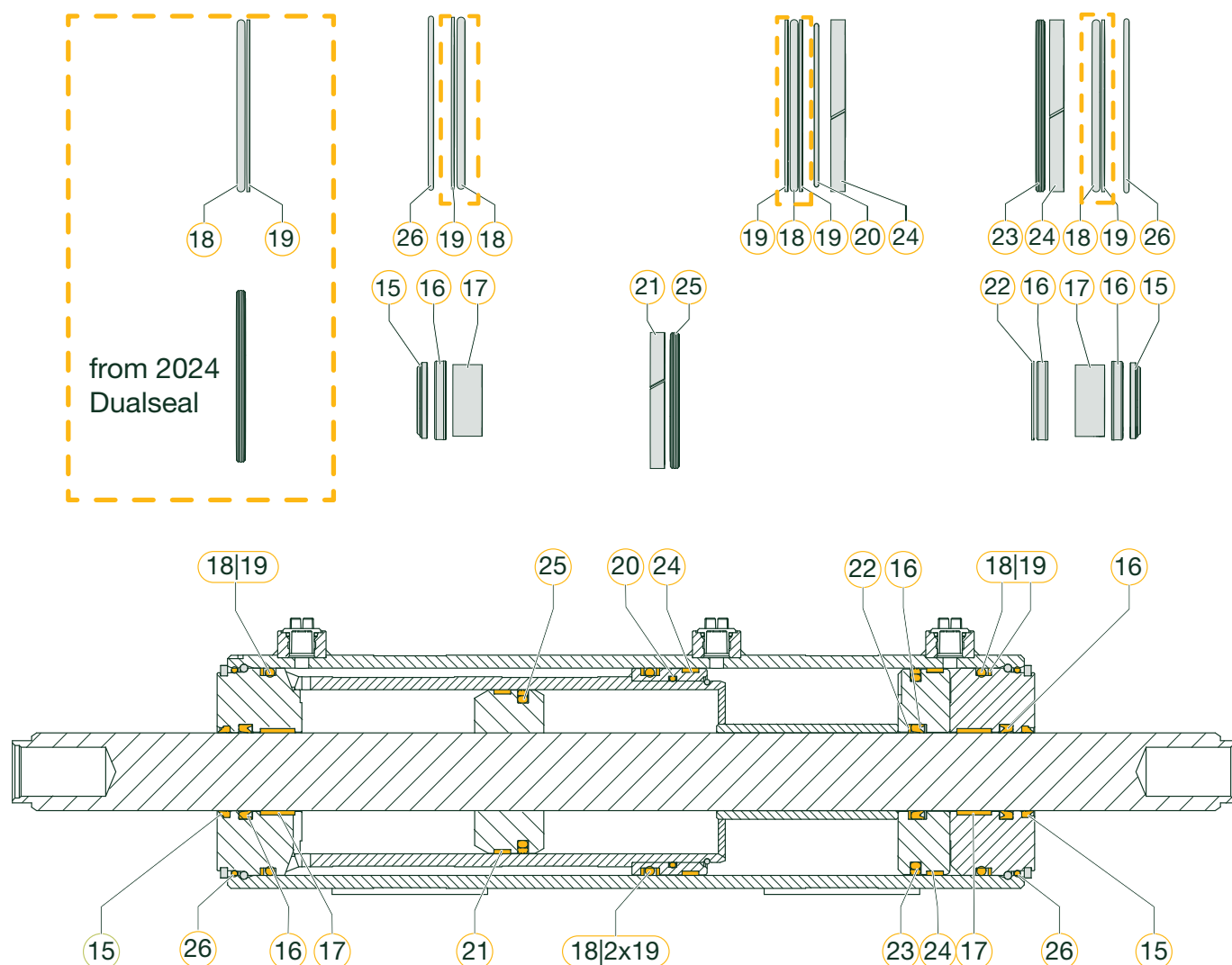
- 1 Cylinder body
- 2 Rod unit
- 3 Guide sleeve
- 4 Piston
- 5 Guide bushing
- 6 Spacer sleeve
- 7 Round snap ring
- 8 Circlip
- 9/x Hose coupling (M16 x 1,5)
- 10 Bleed coupling (M8 x 1)
- 11 Bleed screw (M8 x 1)
- 12 Threaded connection M12 (upper)
- 13 Threaded connection M12 (bottom)

Item Description

- 14 Round snap ring / No snap ring from 2018
- 15 Wiper seal ring
- 16 Rod seal
- 17 Guide ring / Optionally
- 18 O-ring
- 19 Back-up ring
- 20 O-ring
- 21 Guide ring
- 22 Back-up ring
- 23 Piston seal
- 24 Guide ring
- 25 Piston seal
- 26 O-ring / Optionally

Seal kit, variant 1

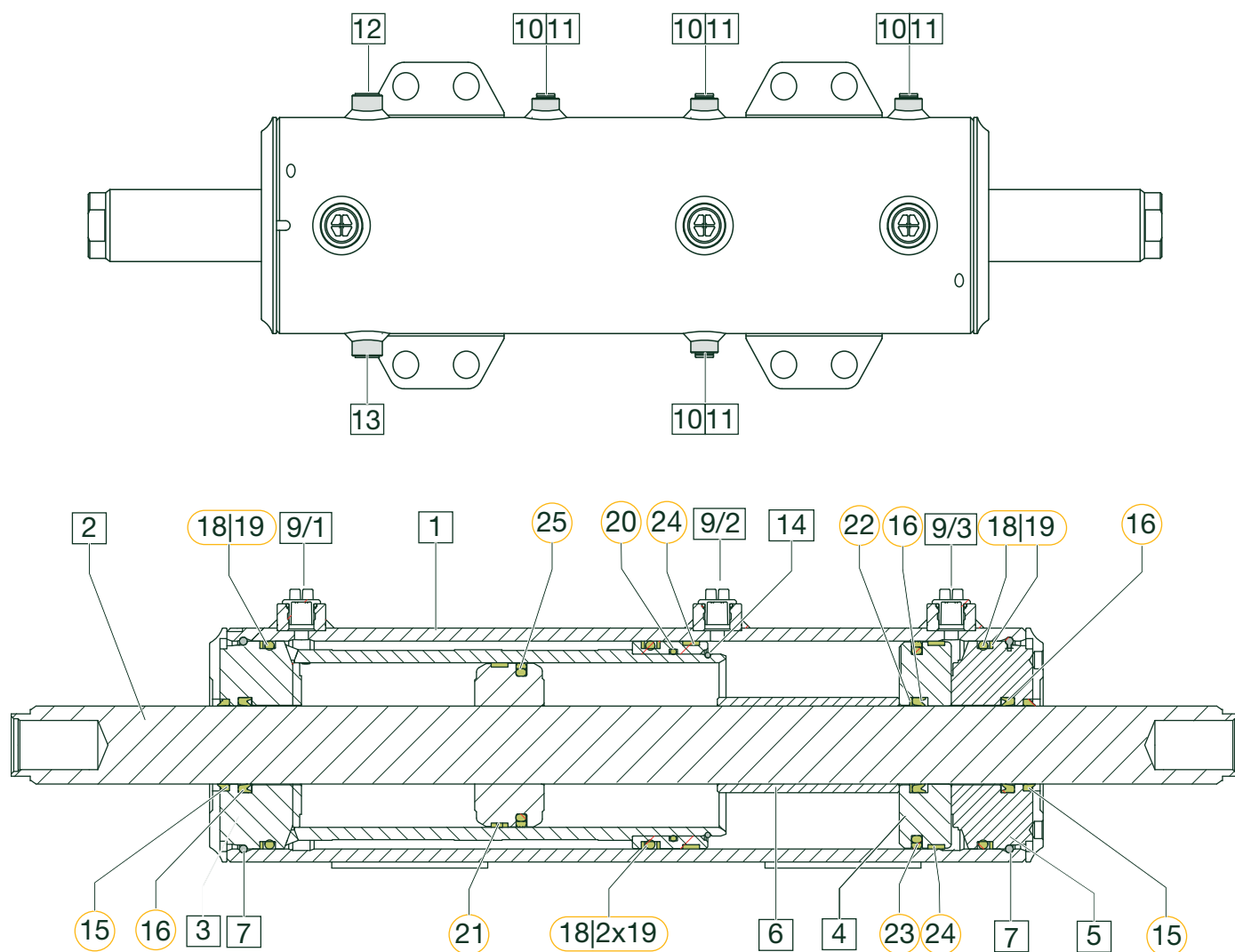
2.2



Item No.	Pcs	Description	Size
15	2	Wiper seal ring	45 - 53 - 4/7
16	3	Rod seal	45 - 55 - 8/7
17	2	Guide ring	45 - 50 - 20
18	3	O-ring / Dualseal from 2024	109,5 x 5,33
19	4	Back-up ring / Dualseal from 2024	120 - 111,4 - 1,9
20	1	O-ring / No O-ring from 2018	104,37 x 3,53
21	1	Guide ring	95 - 90 - 9,7
22	1	Back-up ring	45 - 55 - 1,5
23	1	Piston seal	120 - 104,5 - 6,3
24	2	Guide ring	120 - 115 - 9,7
25	1	Piston seal	95 - 79,5 - 6,3
26	2	O-ring	103, 3, 5

2 Identification of components, variant 2

2.3 Securing the guide sleeve with a Steel wire ring



Item Description

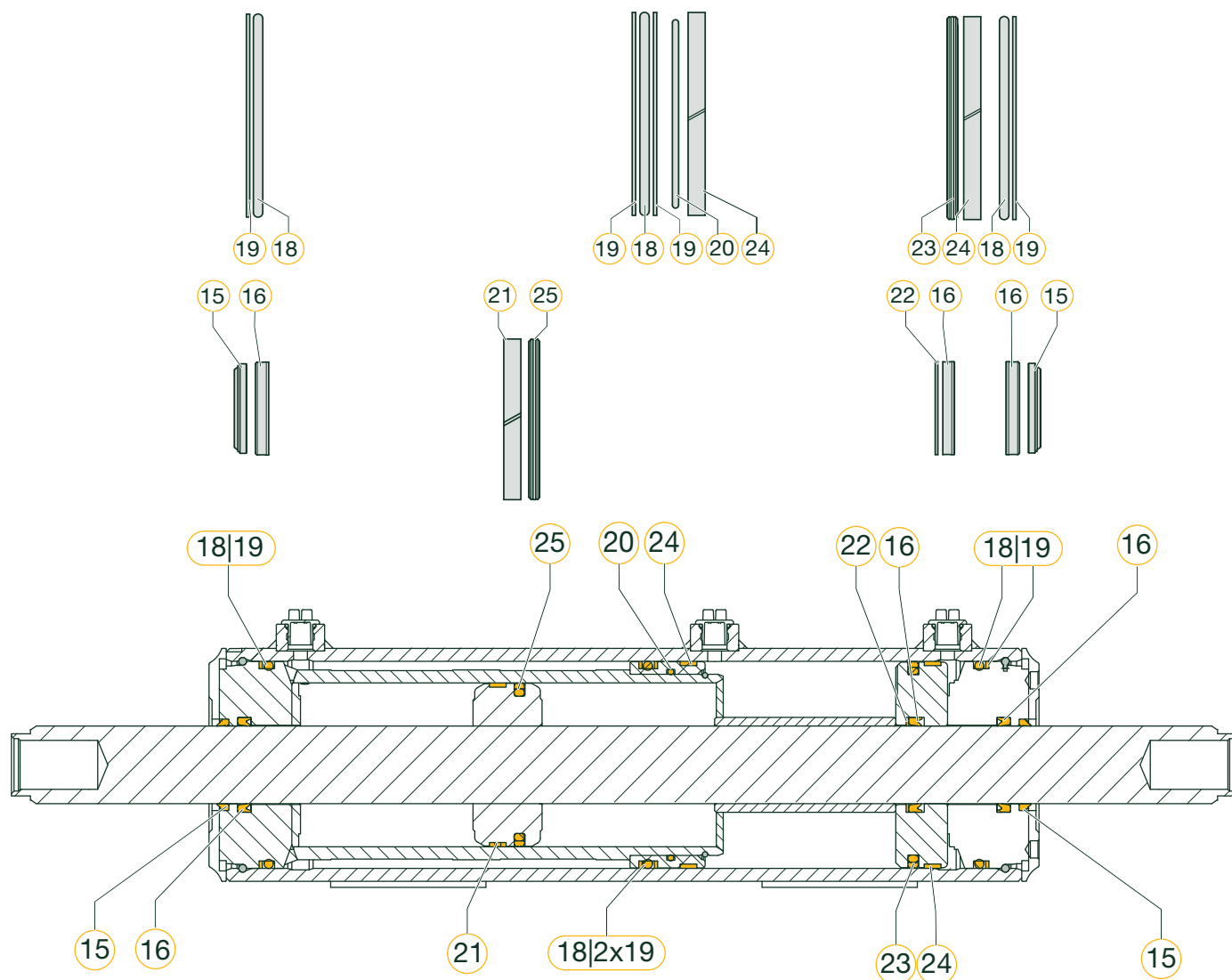
- 1 Cylinder body
- 2 Rod unit
- 3 Guide sleeve
- 4 Piston
- 5 Guide bushing
- 6 Spacer sleeve
- 7 Round snap ring / from 2020 Wire ring
- 8 Girelip
- 9/x Hose coupling (M16 x 1,5)
- 10 Bleed coupling (M8 x 1)
- 11 Bleed screw (M8 x 1)
- 12 Threaded connection M12 (upper)
- 13 Threaded connection M12 (bottom)

Item Description

- 14 Round snap ring
- 15 Wiper seal ring
- 16 Rod seal
- 17 Guide-ring
- 18 O-ring
- 19 Back-up ring
- 20 O-ring
- 21 Guide ring
- 22 Back-up ring
- 23 Piston seal
- 24 Guide ring
- 25 Piston seal
- 26 O-ring

Seal kit, variant 2

2.4



Item No.	Pcs	Description	Size
15	2	Wiper seal ring	45 - 53 - 4/7
16	3	Rod seal	45 - 55 - 8/7
17	2	Guide-ring-	45-50-20
18	3	O-ring	109,5 x 5,33
19	4	Back-up ring	120 -111,4 -1,9
20	1	O-ring	104,37 x 3,53
21	1	Guide ring	95 - 90 - 9,7
22	1	Back-up ring	45 - 55 - 1,5
23	1	Piston seal	120 - 104,5 - 6,3
24	2	Guide ring	120 - 115 - 9,7
25	1	Piston seal	95 - 79,5 - 6,3
26	2	O-ring	103,3-5-

3 Disassembly the Cylinder

3.1 Guide Sleeve Fastening with a Circlip

Note:

The repair work is done with the steering cylinder removed from vehicle. For information on installing and removing the steering cylinder, see the workshop manual for replacing active/passive steering cylinders on the website. BPW Part No.: 05.444.50 73.0

- [1] Remove all contaminants from cylinder outer surface, thoroughly clean it.
- [2] Remove the cap screw (11) from the connection fitting (10) using a 4 mm hex wrench.
- [3] Remove any oil remaining in the cylinder area.
- [4] Clamp the steering cylinder in a vise.

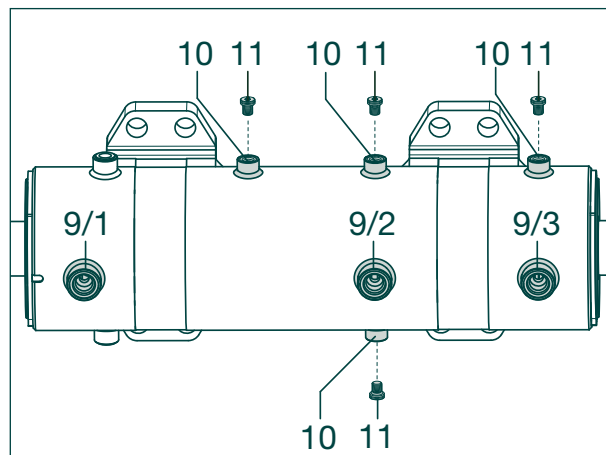


Figure 01

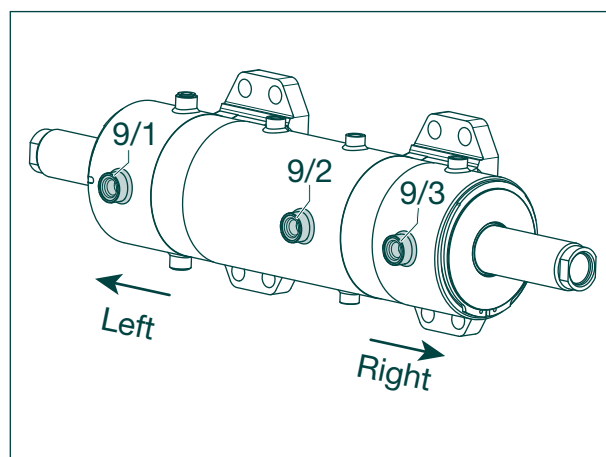


Figure 02

Guide Sleeve Fastening with a Circlip

Right side

- [5] Remove the Circlip (8) from the Guide bushing (5) using circlip pliers.

Repair Guide:

Use suitable pliers for installation.

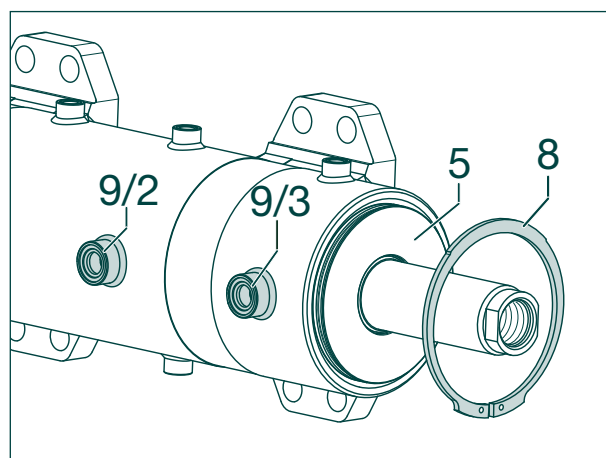


Figure 03

- [6] Slide the Guide bushing (5) into the Cylinder body (1) until the O-ring (26) is seated in the groove of the circlip.

Repair Guide:



Depending on the cylinder model, it may not include the O-ring.

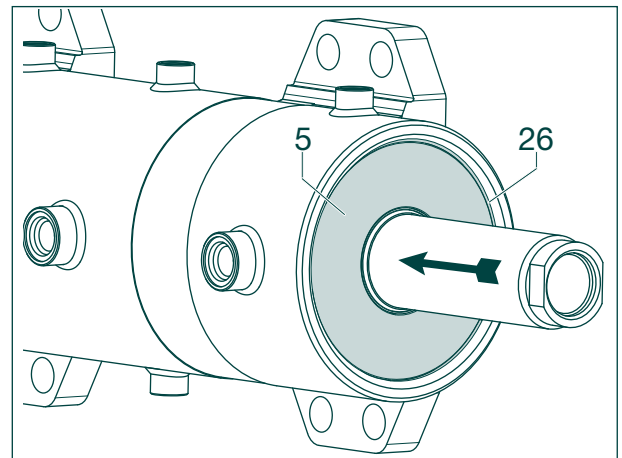


Figure 04

- [7/a] Supply compressed air through the hose connection (9/2); this will push the Guide bushing (5) out as far as it will go, allowing you to remove the O-ring (26).

- [7/b] Manually slide the Piston rod (2) to the right until it stops, and remove the O-ring (26).

Danger!



When compressed air is used, the Piston rod (2) can move quickly and with great force. Ensure there is sufficient clearance for the moving Piston rod (2) to prevent injury.

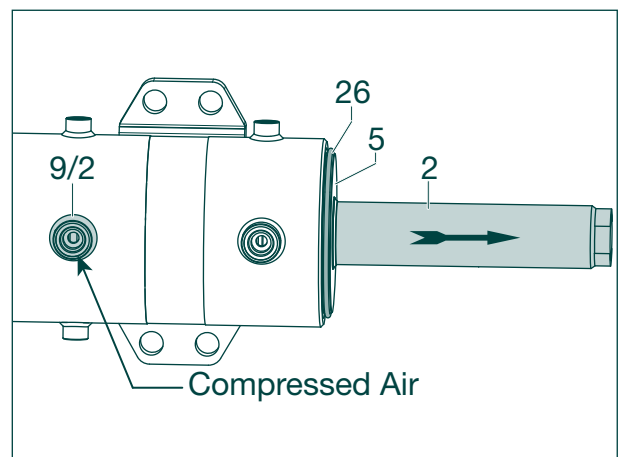


Figure 05

- [8] Slide the Guide bushing (5) into the Cylinder body and remove the Round snap ring (7).

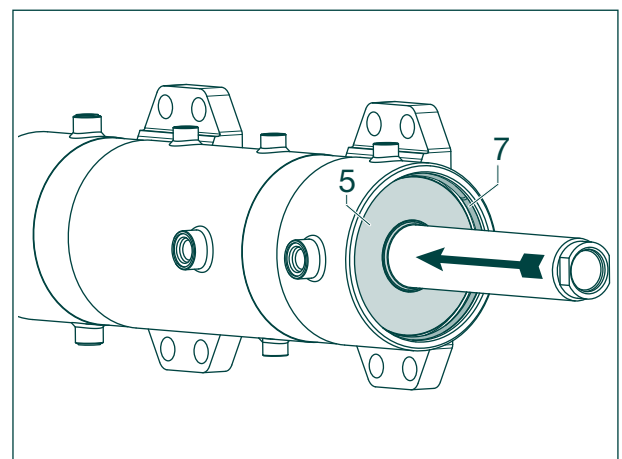


Figure 06

3 Disassembly the Cylinder

3.1 Guide Sleeve Fastening with a Circlip

Left side

- [9] Remove the Circlip (8) from the Guide sleeve (3) using circlip pliers.

Repair Guide:

Use suitable pliers for installation.

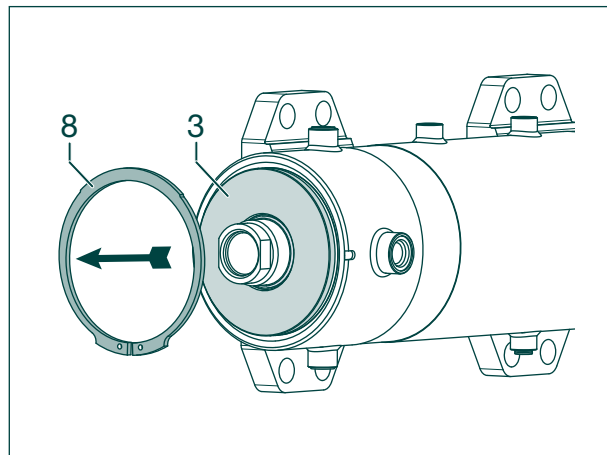


Figure 07

- [10] Slide the Guide sleeve (3) into the Cylinder tube (1) until the O-ring (26) is seated in the groove of the circlip.

Repair Guide:

Depending on the cylinder model, it may not include the O-ring.

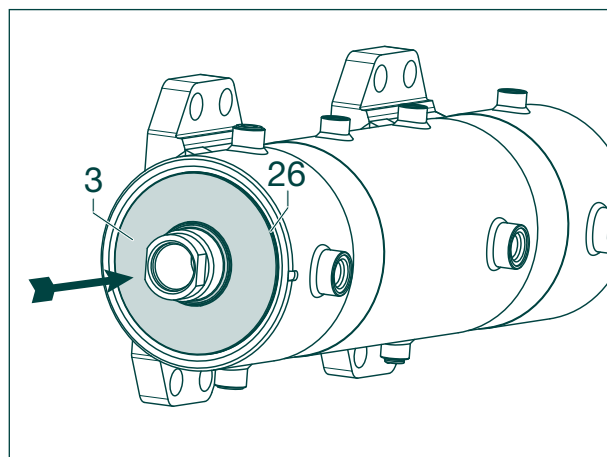


Figure 08

- [11/a] Supply compressed air through the center ports (9/1); this will push the Guide sleeve (3) all the way out until it stops, and then remove the O-ring (26).

- [11/b] Move the Piston rod (2) to the right by hand until it stops, and remove the O-ring (26).

Danger!

When compressed air is used, the Piston rod (2) can move quickly and with great force. Ensure there is sufficient clearance for the moving Piston rod (2) to prevent injury.

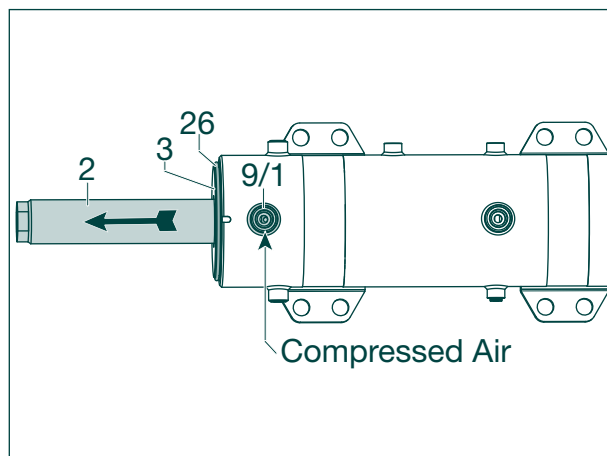


Figure 09

- [12] Move the Rod unit (2) towards to the Guide bushing (5) then pull out the Rod unit (2), Spacer (6), Piston (4) and the Guide bushing (5) out of the Cylinder tube (1).

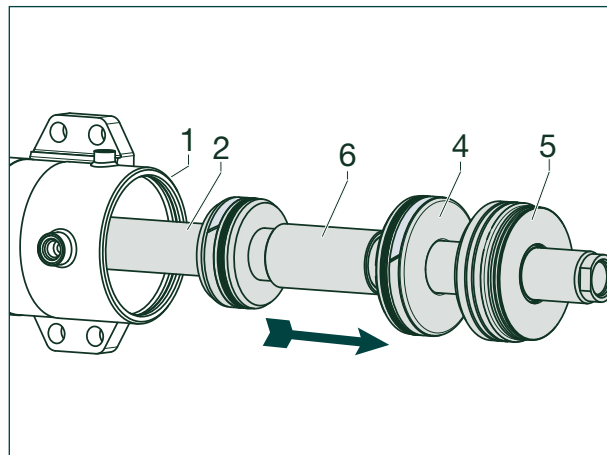


Figure 10

- [13] Push the Guide sleeve (3) into the Cylinder body (1), until the inner Round snap ring (7) is fully exposed, then remove it.

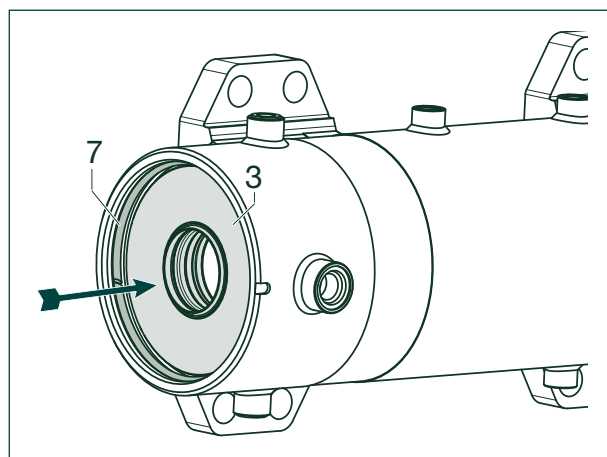


Figure 11

- [14] Pull the Guide sleeve (3) out of the Cylinder body.

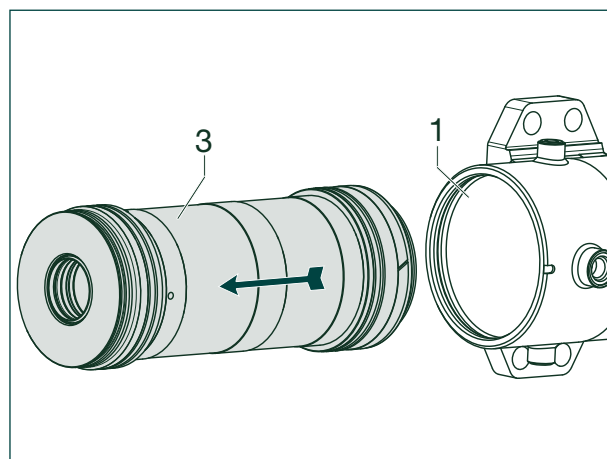


Figure 12

3 Disassembly the Cylinder

3.1 Guide Sleeve Fastening with a Seeger Ring

Variant 1 and Variant 2

- [15] Secure the Guide sleeve (3) to the workbench, remove the Round snap ring (14), then slide the Ring completely off the Guide sleeve.

Repair Guide:



Depending on the model, the Ring can be completely removed from the Guide sleeve (3). Before dismantling, ensure that the ring can be removed before carrying out the full assembly and dismantling of the Guide sleeve.

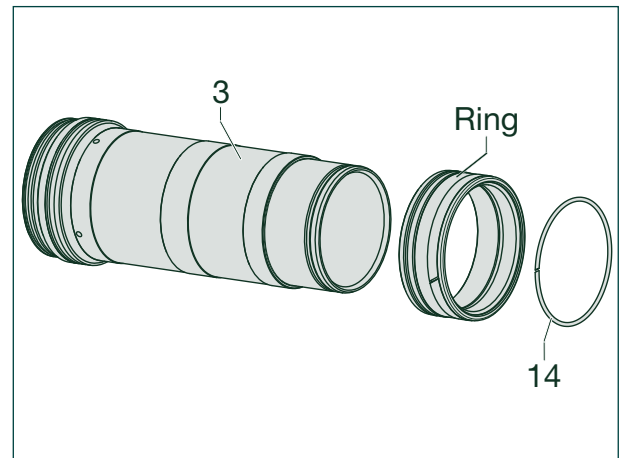


Figure 13

Disassembly the Cylinder

3

Guide bushing fastening with a steel wire ring

3.2

[16] Remove sealant from the hole.

Repair Guide:



The bore is sealed with sealant to protect the inner tube from contamination.

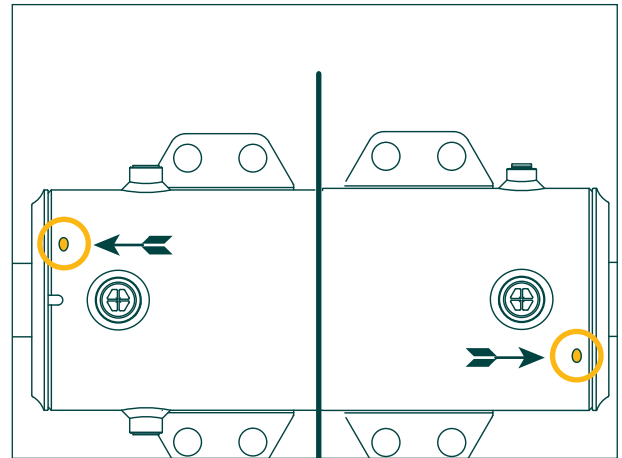


Figure 14

[17] Insert the screwdriver into the hole as shown in the picture, and turn the Guide sleeve (3) and Guide bushing (5) counterclockwise until the end of the Steel wire ring (7) is visible inside the bore.

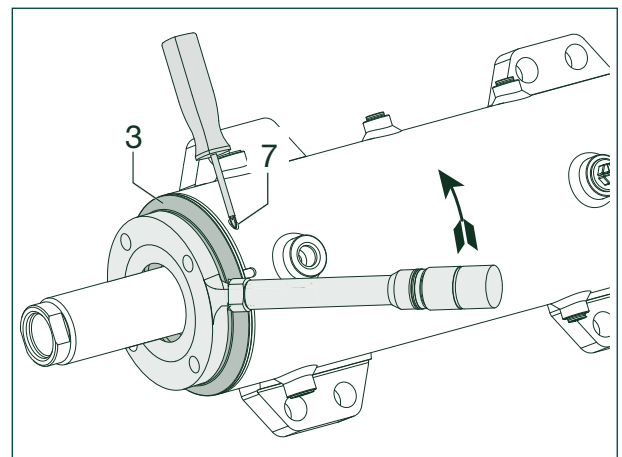


Figure 15

[18] Turn the Guide sleeve (3) and the Guide bushing (5) counterclockwise until the Steel wire ring has completely come out of the tube. Use a screwdriver to remove the retaining ring (7) from the hole.

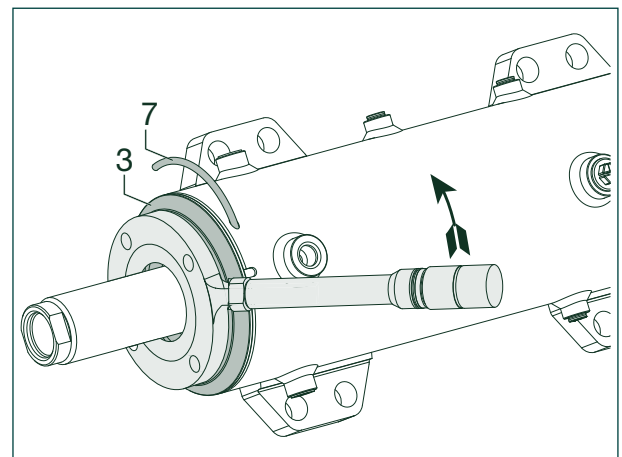


Figure 16

Right side

- [19] Pull the Piston rod (2), along with the Spacer sleeve (6), the Piston (4), and the Guide bushing (5), out of the Cylinder body (1).

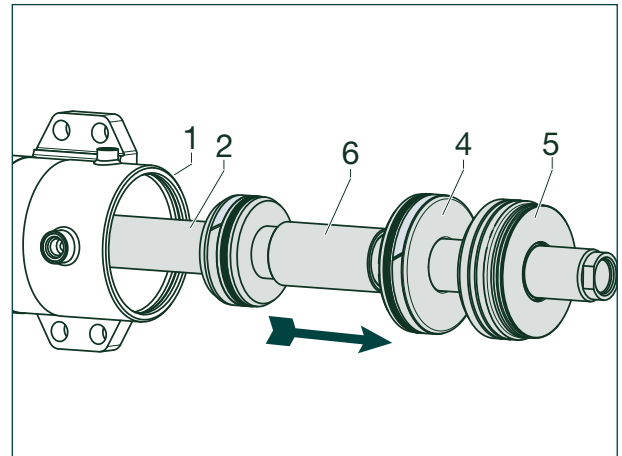


Figure 17

- [20] Push the Guide sleeve (3) out of the Cylinder body (1).

Repair Guide:



The Guide sleeve can be pushed out completely, for example, using the handle of a hammer. The tool used for pushing-out must not be made of metal to prevent damage.

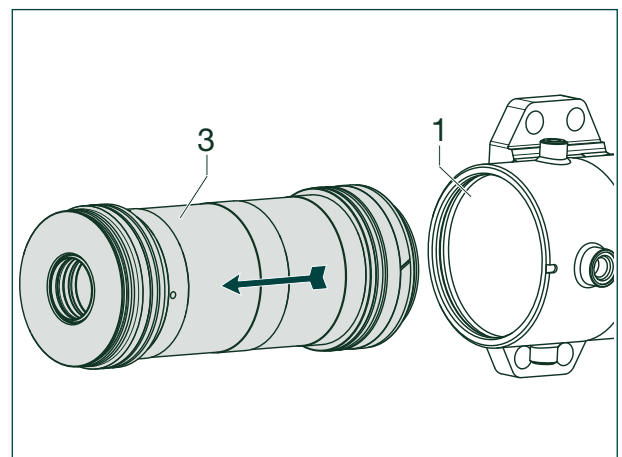


Figure 18

- [21] Fasten the Guide sleeve (3) to the workbench, remove the retaining ring (14), then slide the ring completely off the guide sleeve.

Repair Guide:



Depending on the model, the Ring can be removed from the Guide sleeve (3). Before disassembly, ensure that the piston is mountable before completely carrying out the assembly and disassembly on the Guide sleeve.

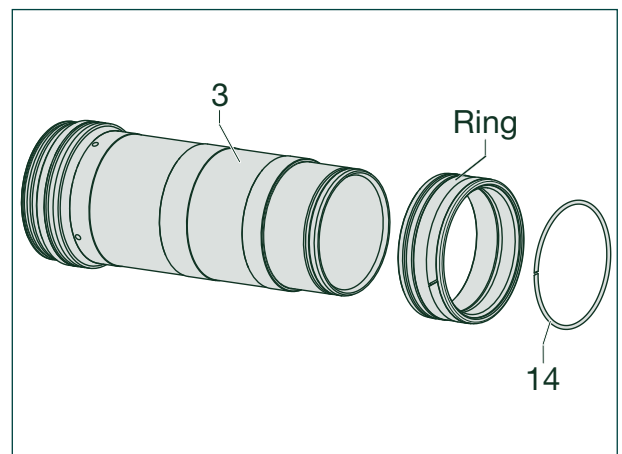


Figure 19

Replacing seals 4

Replacing the seals on the guide sleeve

Variant 1

- [22] Replace the O-ring (18), Back-up ring (19), Rod wiper seal (15), Rod seal (16), and Guide ring (17) from the Guide bushing (5).

Repair Guide:



After removing the seals, all components must be carefully washed and cleaned. Only then should new seals be installed.

Repair Guide:



Starting in 2024, the seals in positions 18 and 19 were replaced with Dualseal. Please note the groove width of the Dualseal is 6 mm.

Variant 2

- [22] Replace the O-ring (18), Back-up ring (19), Rod wiper seal (15), and Rod seal (16) on the Guide bushing (5).

Repair Guide:



After removing the seals, all components must be carefully washed and cleaned. Only then should new seals be installed.

Repair Guide:



The Rod seal (16) must be installed that the sealing lip facing inwards and in case of Rod wiper seal (15) facing outwards.

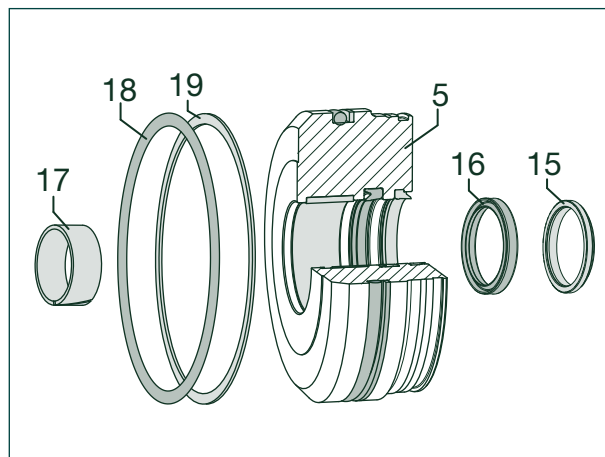


Figure 20

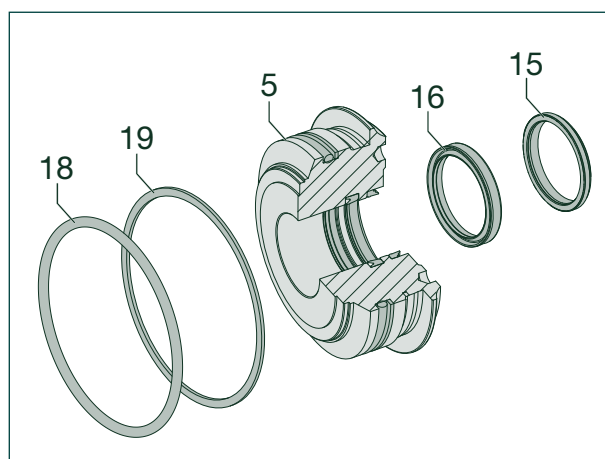


Figure 21

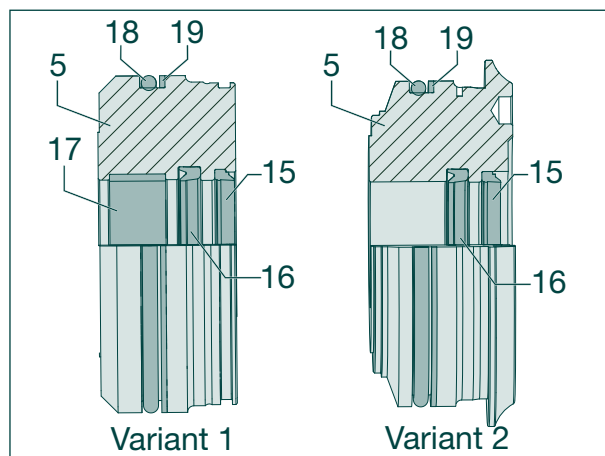


Figure 22

4 Replacing seals

Replacing the seals on the floating piston

- [23] Replace the Piston seal (23), Guide ring (24), Back-up ring (22), and Rod seal (16) on the floating piston.

Repair Guide:



After removing the seals, all components must be carefully washed and cleaned. Only then should new seals be installed.

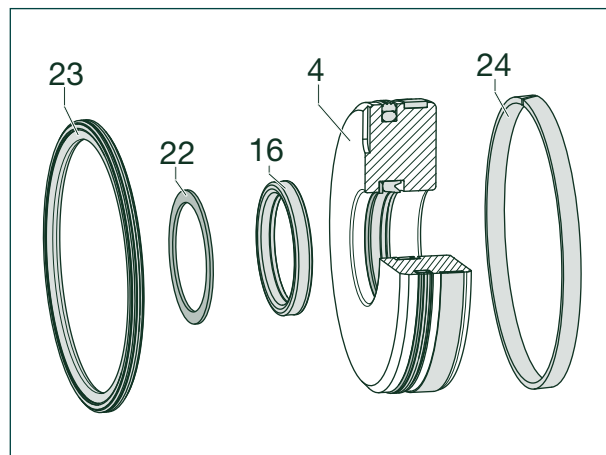


Figure 23

Repair Guide:



The Rod seal (16) must be installed with the sealing lip facing inward.

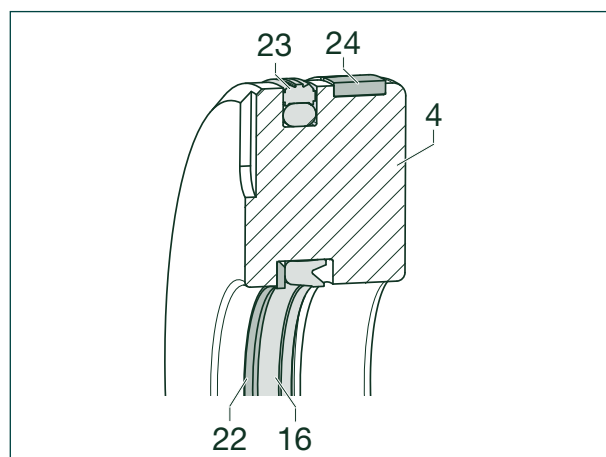


Figure 24

Replacing the seals on the Piston rod

- [24] Replace the Piston seal (25) and Guide ring (21) on the Piston rod.

Repair Guide:



After removing the seals, all components must be carefully washed and cleaned. Only then should new seals be installed.

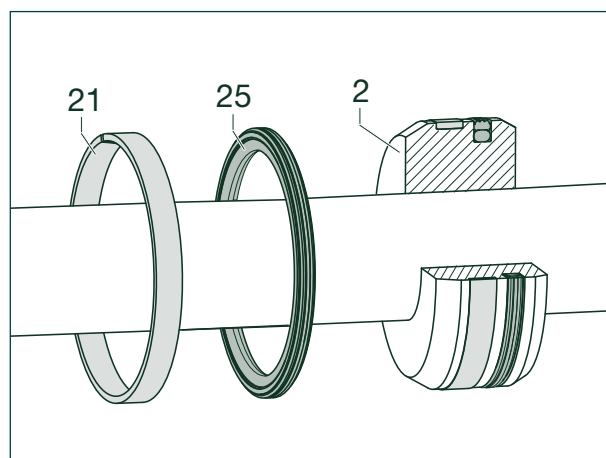


Figure 25

Replacement of the seals on the the Guide sleeve

- [25] Replace the O-ring (18), Back-up ring (19), Rod wiper seal (15), Rod seal (16), and Guide ring (17) from the Guide sleeve (3.)

Repair Guide:



After removing the seals, all components must be carefully washed and cleaned. Only then should new seals be installed.

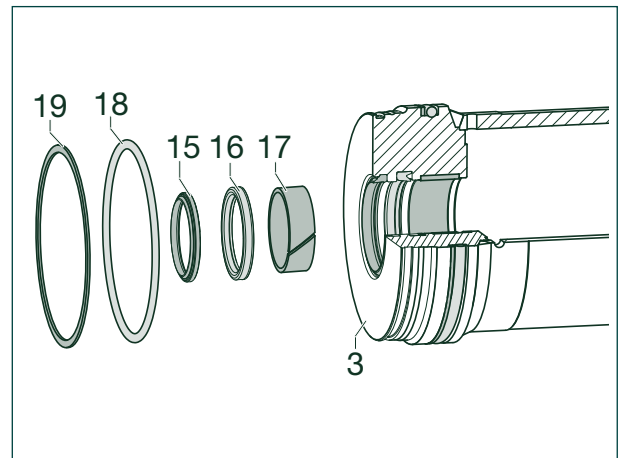


Figure 26

Variant 1:

Repair Guide:



Starting in 2024, the seals at positions 18 and 19 were replaced with Dualseal. Please note the groove width of the Dualseal is 6 mm.

Repair Guide:



The Rod seal (16) must be installed that the sealing lip facing inwards and in case of Rod wiper seal (15) facing outwards.

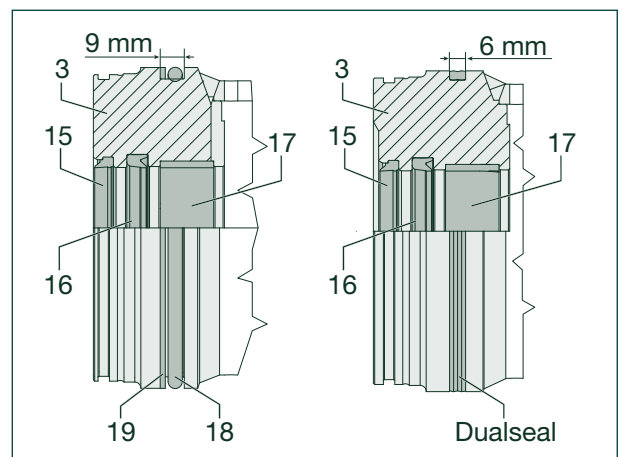


Figure 27

- [26] Replace the Guide ring (24), Back-up ring (19), O-ring (18), and Back-up ring (19) from the Guide sleeve (3)

Repair Guide:



After removing the seals, all components must be carefully washed and cleaned. Only then should new seals be installed.

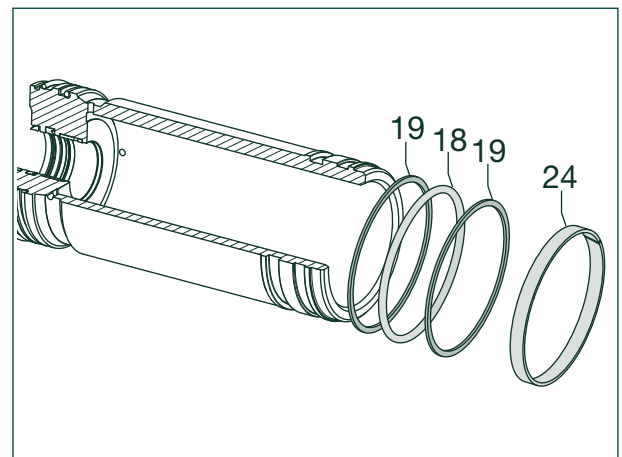


Figure 28

4 Replacing seals

Variant 1 or Variant 2:

- [27] Remove the Round snap ring (14) and pull the Ring off the Guide sleeve (3).

Repair Guide:



Depending on the model, the Ring can be removed from the Guide sleeve (3). Before disassembly, ensure that the piston is mountable before completely carrying out the assembly and disassembly on the Guide sleeve.

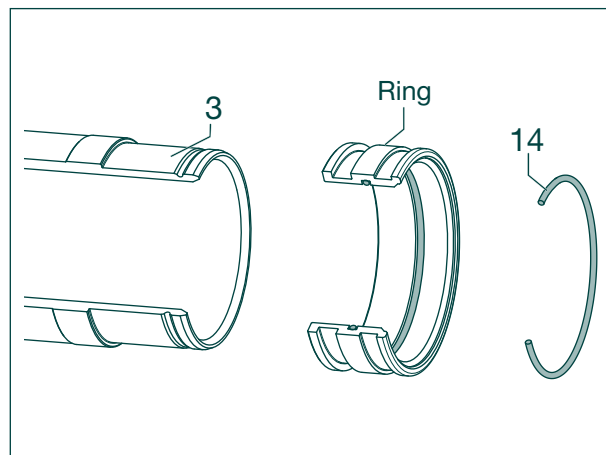


Figure 29

- [28] Replace the O-ring (20) on the Ring.

Repair Guide:



After removing the seals, all components must be carefully washed and cleaned. Only then should new seals be installed.

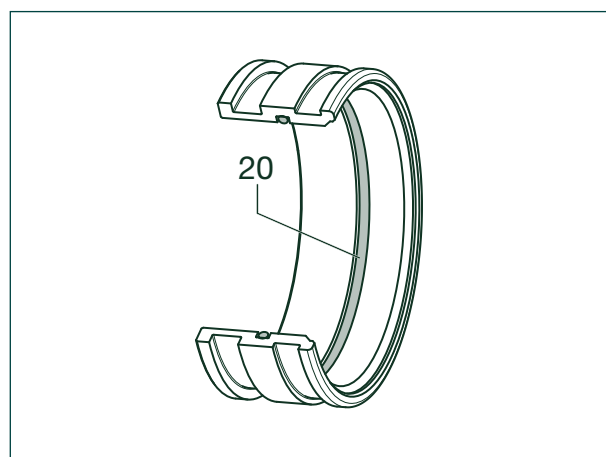


Figure 30

- [29] Slide the Ring, with the pre-installed seals, all the way onto the Guide sleeve (3) and secure it with the Round snap ring.

Repair Guide:



Before installation, the surface of the O-ring should be lubricated with clean oil.

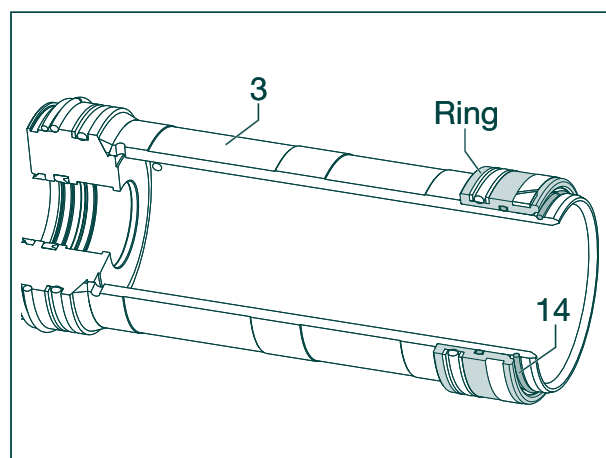


Figure 31

Installation of the cylinder

5

Guide Sleeve Mounting with a Circlip

5.1

- [30] Lightly lubricate the inside of the Cylinder body (1) with clean oil.

Repair Guide:



Inspect the Cylinder body (1) for damage and wear on all bores and threads. If damage is detected, the entire cylinder must be replaced.

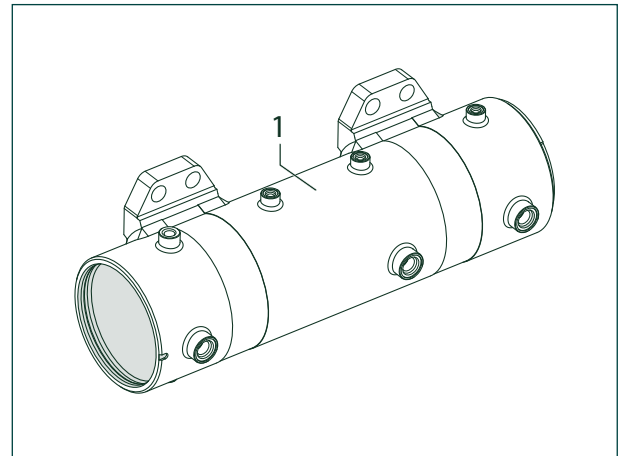


Figure 32

- [31] Lubricate the outer surface of the Guide sleeve (3), as well as the bores and seals, with clean hydraulic oil, and insert it into the Cylinder body (1) until the Round snap ring can be installed.

- [32] Insert the Steel wire ring (7) into the groove.

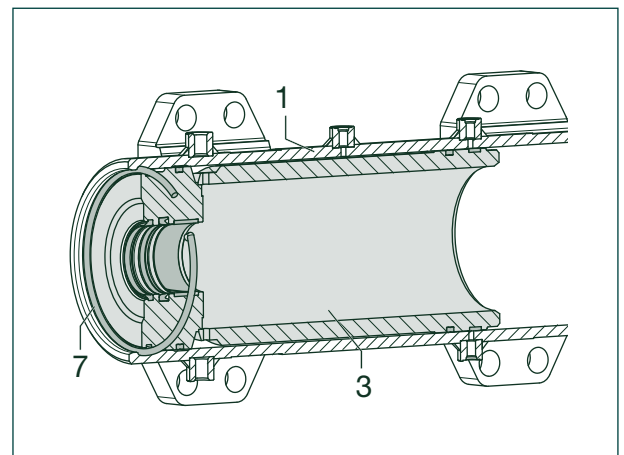


Figure 33

- [33] Slide the Spacer sleeve (6), Piston (4), and Guide bushing (5) onto the Piston rod.

Repair Guide:



Check the chrome surface of the Piston rod (2) for damage. If damage is detected, the entire cylinder must be replaced.

Repair Guide:



The Piston (4) is manufactured with a notch. When installing, the notch should face inward.

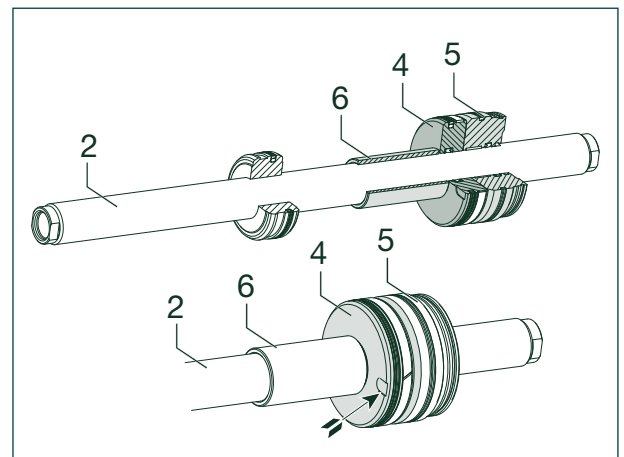


Figure 34

5 Installation of the cylinder

5.1 Guide Sleeve mounting with a Circlip

- [34] Lubricate the seals on the Piston rod (2), Piston (4), and Guide bushing (5) with clean hydraulic oil, then slide them all the way into the Cylinder body until the Round snap ring can be installed.
- [35] Insert the Steel wire ring (7) into the groove.

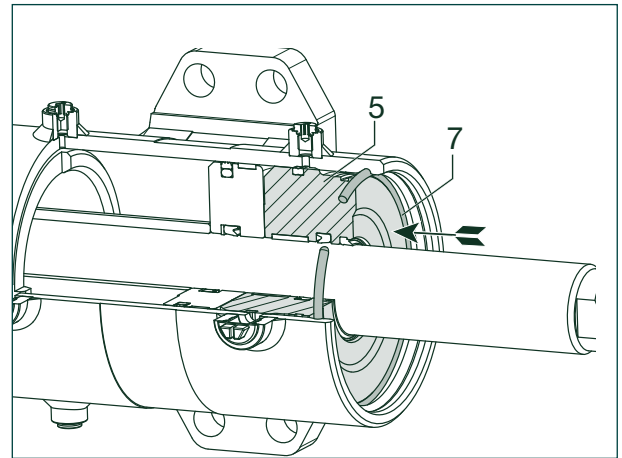


Figure 35

- [36] Supply compressed air via the middle connections (9/2), thereby pushing out the Guide bushing (5) and the Guide sleeve (3) up to the pre-assembled Round snap ring (7).

Note:



To avoid damage, the cylinder should be operated with the lowest possible pressure.

Note:



No compressed air: Move the Piston rod (2) by hand to the left and right until the Guide bushing (5) and the guide sleeve (3) touch the Round snap ring (7).

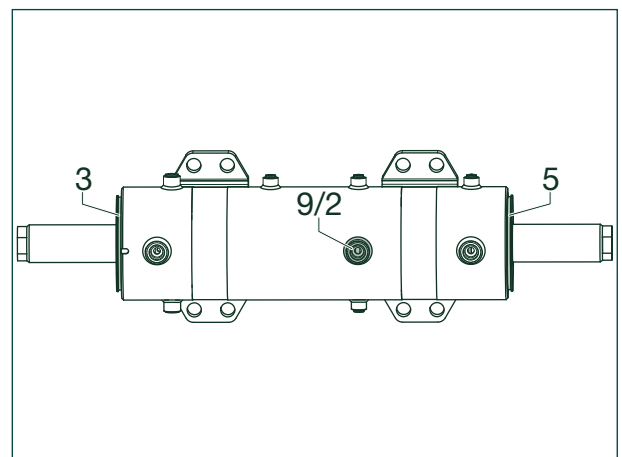


Figure 36

- [37] Insert the O-ring (26) onto the Guide bushing (5) and the Guide sleeve (3).

Repair Guide:



To facilitate installation, the old O-ring is inserted into the groove of the Round snap ring. This makes installing the new O-ring easier.

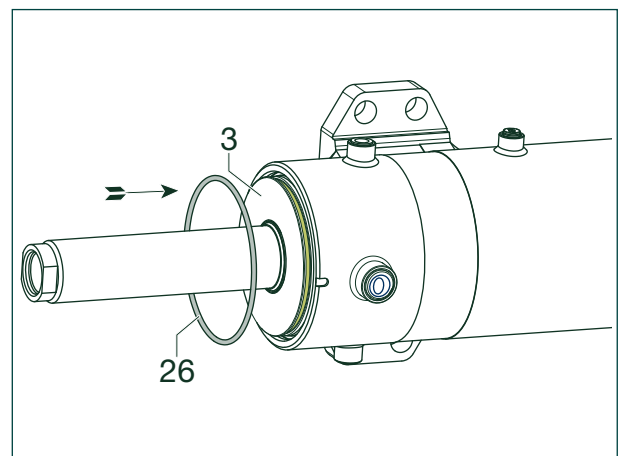


Figure 37

[38] Replace the Circlip (8) in the groove.

Note:



Also, make sure that the Circlip (8) is firmly seated in the groove of the Guide sleeve or bushing before removing the tool.

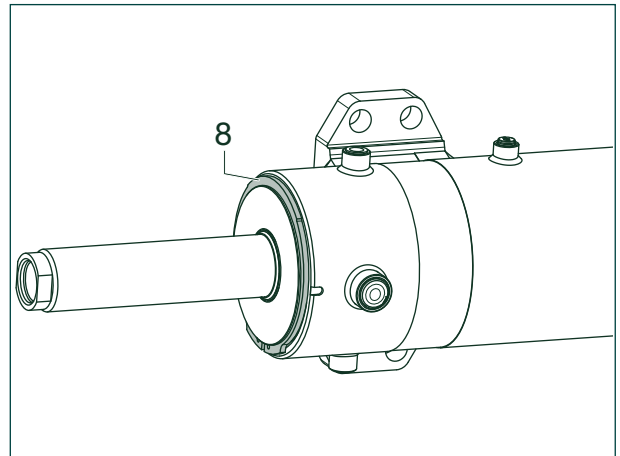


Figure 38

[39] Tighten the Bleed screws (10/11, SW4, Allen screw) with a tightening torque of **10 Nm**.

[40] Perform a leak test. Test through the cylinder ports (9/1, 9/2, 9/3) with a test pressure (max. 210 bar).

Repair Guide:



Make sure that no oil is leaking from the Piston rod seal and that the cylinder operates smoothly at minimum operating pressure.

Note:



Reinstall the cylinder on the axle according to BPW specifications. The workshop manual for BPW products can be found on the page: www.bpwagrar.com

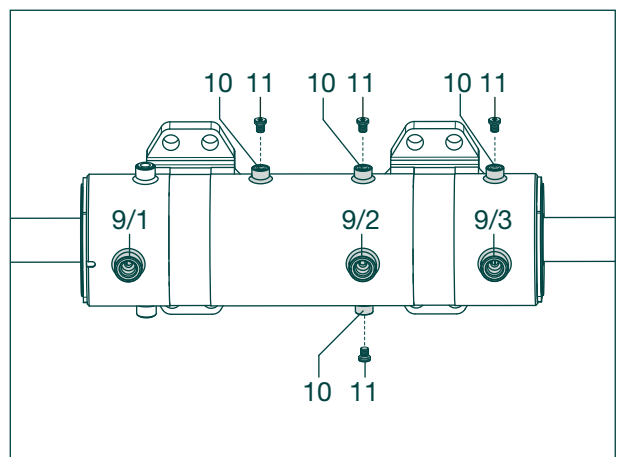


Figure 39

5 Installation of the cylinder

5.2 Guide bushing mounting with a Steel wire ring

- [41] Lightly lubricate the inside of the Cylinder body (1) with clean oil.

Repair Guide:



Inspect the Cylinder body (1) for damage and wear in for all bores and threads.

If damage is detected, the Cylinder must be replaced.

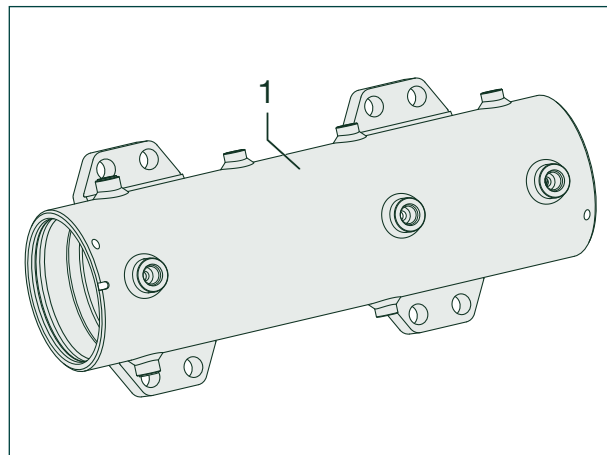


Figure 40

- [42] Lubricate the outer surface of the Guide sleeve (3), as well as the bores and seals, with clean hydraulic oil, and insert it into the Cylinder body (1) until it stops.

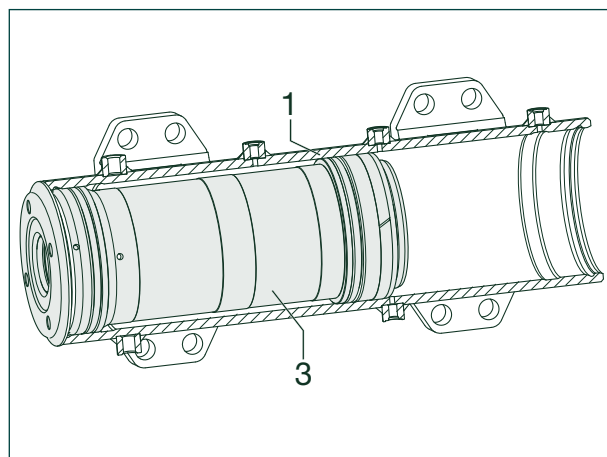


Figure 41

- [43] Slide the Spacer (6), Piston (4), and Guide bushing (5) onto the Piston rod.

Repair Guide:



Check the chrome-plated surface of the Piston rod (2) for damage.

If damage is detected, the cylinder must be replaced.

Repair Guide:



The Piston (4) is manufactured with a notch. When installing, make sure the notch is facing outward.

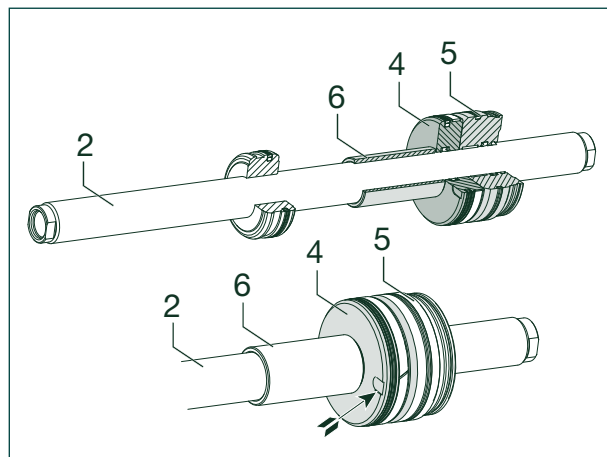


Figure 42

- [44] Lubricate the seals on the Piston rod (2), Piston (4), and Guide bushing (5) with clean hydraulic oil, then insert them fully into the Cylinder body until they stop.

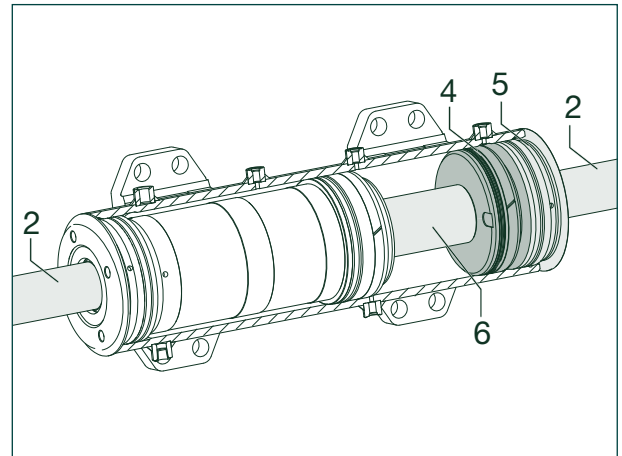


Figure 42

- [45] Rotate the Guide sleeve clockwise so that the holes in the Cylinder tube and the Guide sleeve are aligned.

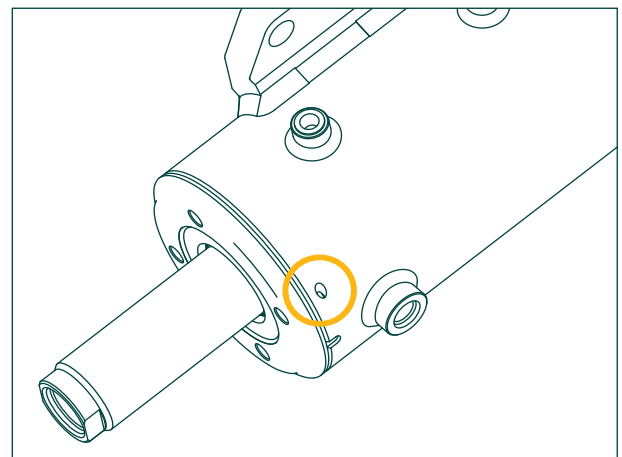


Figure 43

- [46] Insert the Steel wire ring (7) through the bore of the Cylinder body and insert the end with the hook into the bore in the Guide sleeve. Then turn the Guide sleeve clockwise; this will move the retaining ring into the correct position.

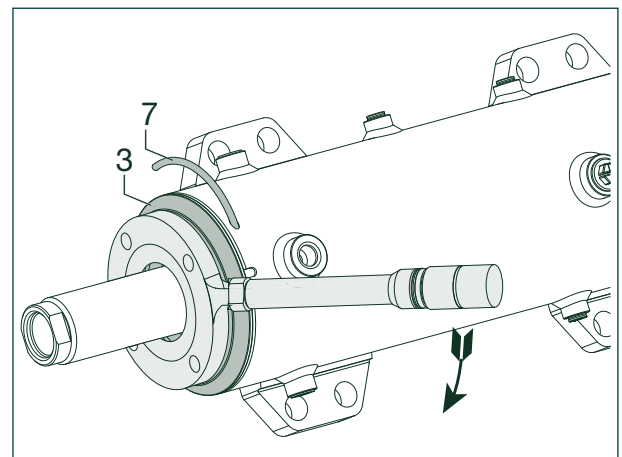


Figure 44

5 Installation of the cylinder

5.2 Guide bushing mounting with a Steel wire ring

- [47] Use sealant in the bore to protect against contamination.

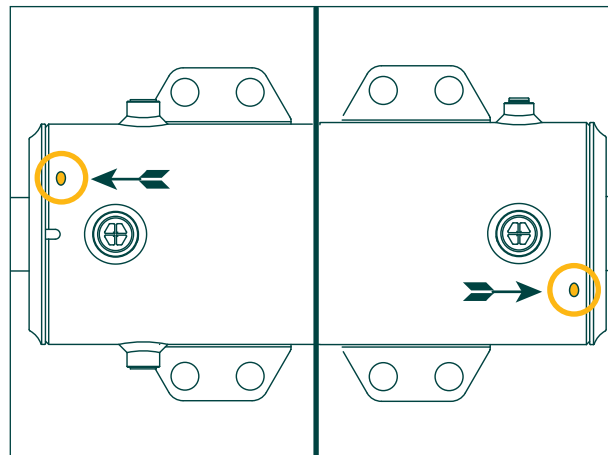


Figure 45

- [48] Tighten the bleed screws (10/11, SW4, hex socket screw) to a torque of **10 Nm**.

- [49] Carry out a leak test. Test the cylinder's ports (9/1, 9/2, 9/3) using a test pressure (max. 210 bar).

Repair Guide:



Make sure that no oil is leaking from the Piston rod seal and that the Cylinder operates smoothly at minimum operating pressure.

Note:



When installing the cylinder as a self-steering system, the bleed valve must be installed in the middle chamber; see the workshop manual for replacing active/passive steering cylinders, BPW Part No.: 05.444.50 73.0, www.bpwagrar.com

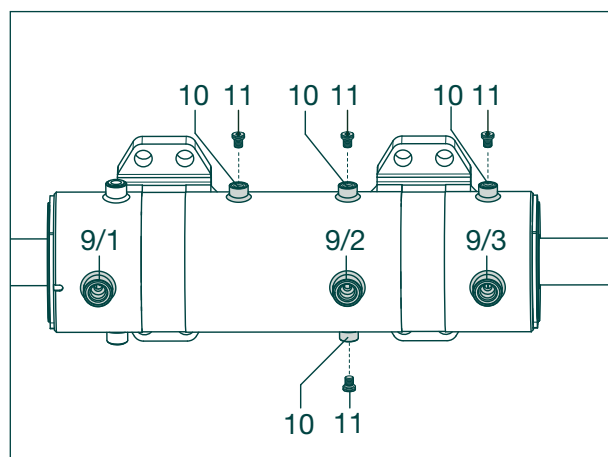


Figure 46

Notes



BPW-WH-SR 55202601e

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